THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 33

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte IVAN BOZOVIC and JAMES N. ECKSTEIN

Appeal No. 1997-1454
Application No. 07/931,632

ON BRIEF

Before CAROFF, OWENS, and SPIEGEL, Administrative Patent Judges.

CAROFF, Administrative Patent Judge.

DECISION ON APPEAL

This decision on appeal relates to the final rejection of claims 1-2 and 5-8. According to the record, it appears that claims 9-14 also remain pending in appellants' application, statements in the Brief to the contrary notwithstanding. However, claims 9-14 stand withdrawn from consideration

pursuant to 37 CFR 1.142(b) as being drawn to a non-elected invention (see Paper No. 19) and, thus, are not before us.

The claims on appeal relate to a thin film of a superconducting compound having the formula M_{1-X} CuO_{2-y} where "M" represents one or more alkaline earth metals, "x" is 0.05 to 0.3, and X>Y. The film is composed of alternating atomic monolayers of CuO_{2-y} and "M", and the layers formed by "M" are required to contain about 5-30% metal-atom vacancies, consistent with the value of "x" in the aforementioned formula.

Appellants acknowledge on page 5 of their Brief that the claims on appeal stand or fall together. Accordingly, in considering the issues on appeal we shall focus solely upon illustrative claim 1 which reads as follows:

1. A thin-film of a high-temperature superconducting compound which is formed of a predetermined sequence of alternating atomic monolayers of CuO_{2-y} and M, wherein Cu has a quadratic structural coordination, and where the layers formed by M are specifically created with a preternatural metal-atom vacancy of about 5-30%, and substantially more vacancies than oxygen-atom vacancies in the CuO_{2-y} layers, said compound having the formula $M_{1-x}CuO_{2-y}$,

where M is one or more alkaline earth metals selected from the group consisting of Ca, Sr, and Ba, M_{1-x} is the mole ratio of total alkaline earth metals, x is 0.05 to 0.3, and

x>y, said compound being characterized by zero resistivity at a temperature of at least 35 K.

The examiner relies upon the following references of record as prior art in rejecting claims under 35 U.S.C. § 102 and
35 U.S.C. § 103:

Koinuma et al. (Koinuma), "Fabrication by Laser MBE and In Situ Characterization of Layered Cuprates", Advances in Superconductivity III (Nov. 6-9, 1990), pp. 1135-38.

Takano et al. (Takano), "Superconductivity in the Ba-Sr-Cu-O system", Physica C 176 (1991), pp. 441-444.

Komuro et al. (Komuro) 4,983,575 Jan. 8, 1991.

The following rejections are maintained by the examiner:

1. Claims 1-2 and 5-8 stand rejected under 35 U.S.C. § 112, first paragraph, for lack of enablement and an adequate written description of "metal-atom vacancy" and "vacancies".

2. Claims 1-2 and 5-8 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite with regard to the expression "substantially more vacancies".

3. Claims 1-2 and 5-8 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Koinuma.

4. Claims 1, 2 and 5 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Takano.

5. Claims 1-2 and 5-7 stand rejected under 35 U.S.C. § 103 as being obvious from Komuro in view of Takano.

6. Claims 1-2 and 5-8 stand rejected under 35 U.S.C. § 103 as being obvious from Komuro in view of Takano and Koinuma.

Based upon the record before us, we reverse all of the rejections at issue essentially for the reasons stated in appellants' Brief. We add the following remarks for emphases.

In deciding questions arising under any one of statutory sections 102, 103 or 112, initially we look to see whether the examiner has established a prima facie case by providing factual evidence or a cogent technical rationale to support his position. Here we find that the examiner's Answer is fatally deficient in this regard.

With regard to the 35 U.S.C. § 112 rejections, the examiner has failed to provide a reasonable basis for concluding that the terms "metal-atom vacancy" and "vacancies" are either indefinite or lack enabling and descriptive support in the specification. In reaching such conclusions, the examiner has apparently overlooked or ignored the fact that the terms "metal-atom vacancy" and "vacancies", as used in the

claims, clearly relate to the "M" layers, i.e. those layers composed of alkaline earth metals. Thus, there can be no doubt that these terms refer to stoichiometric vacancies or deficiencies of alkaline earth metal atoms in the M layers.

Moreover, this view is buttressed by the specification which includes numerous references to these terms relative to the stoichiometry of the M layers (page 4, Lines 29-33; page 5, lines 14-19; page 7, lines 7-10).

The specification, (page 8, lines 16-27) also relates the metal-atom vacancies to a specific stoichiometric parameter, i.e. the molar value of "x", and to the structure depicted in Fig. 2A [sic: Figure 1B]. Additionally, the specification includes a detailed discussion of how such vacancies are created (page 11, lines 11-19; page 13, lines 5-8; Example 1).

The examiner apparently overlooked all of this additional information. Claims cannot be read in a vacuum but, rather, must be read in light of the specification as it would be interpreted by those versed in the art.

With regard to the rejections under 35 U.S.C. § 102 and 35 U.S.C. § 103, we agree with appellants that the examiner has failed to appreciate the lack of any teaching or

suggestion in any of the applied prior art references to create metal-atom vacancies in the alkaline earth metal layers of a thin-film superconductor, and, the lack of any teaching as to how to do so. In this respect, we note that the superconducting materials disclosed in the primary references (Koinuma and Takano) appear to differ from appellants' invention in that the prior art materials have an "x" value of zero, as "x" is defined in the claims, which is not within the scope of appellants' claims.[1]

For the foregoing reasons, the decision of the examiner is reversed.

REVERSED

MARC L. CAROFF)
Administrative Patent Judge)
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[1]In other words, since "x" in the claimed product is 0.05 to 0.3, the mole ratio of total alkaline earth metals in appellants' product is less than one; whereas the comparable mole ratio in the prior art products is exactly one.

	)	BOARD OF PATENT
TERRY J. OWENS	)	APPEALS
Administrative Patent Judge	)	AND
	)	INTERFERENCES
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CAROL A. SPIEGEL	)	
Administrative Patent Judge	)	

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Appeal No. 1997-1454
Application No. 07/931,632

APJ CAROFF

APJ SPIEGEL

APJ OWENS

DECISION: REVERSED
Send Reference(s): Yes No
or Translation (s)
Panel Change: Yes No
Index Sheet-2901 Rejection(s):
Prepared: July 13, 2001

Draft Final

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OB/HD GAU

PALM / ACTS 2 / BOOK
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